L3 CFT Tracking

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CFT Tracking

CFT only tracking

- Separate axial & stereo stages
- Axial
  - Link and tree algorithm
- Stereo
  - Hough transform

Tracker conforms to standard L3 tracking tool interface

- Other tools have a (triggerlist controlled) choice of which tracker to use

Tool certification

Release

p11.00.00-maxopt + l3fchunk memory leak fix

Stability

Ran CFT unpack + track over 27,000 assorted MC events (delivered to IC farm by SAM)

No crashes, no memory leaks

Ran 10,000 events in full (tsim_l3) triggerlist

Took 28 hours, memory usage 143 Mb $\Rightarrow$ 898 Mb

Performance

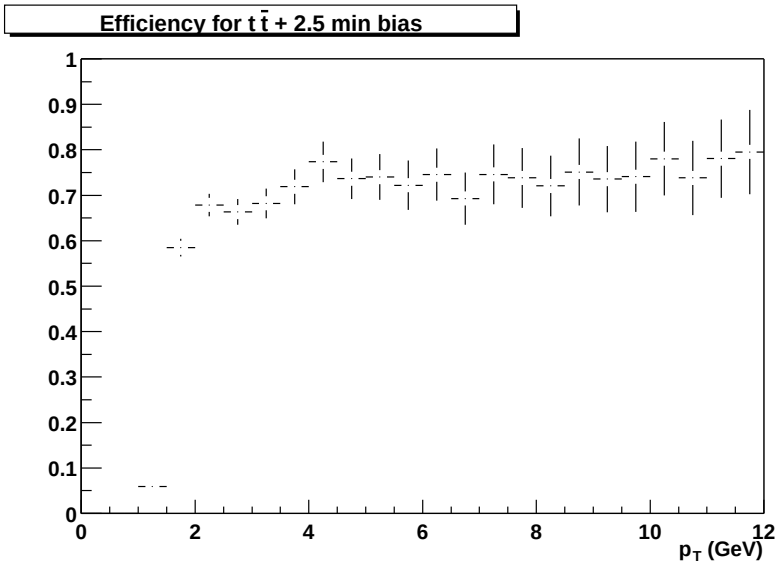
Old purity and efficiency determined using MC hits no longer present in newer MC data

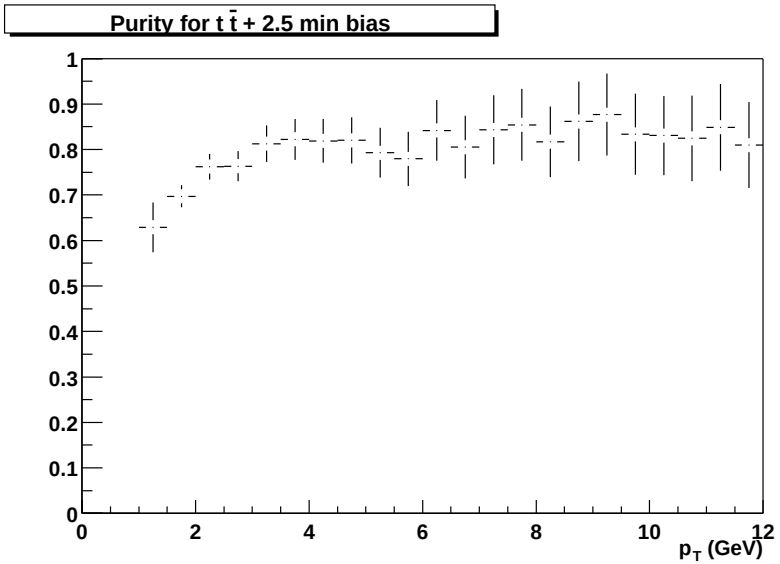
Had to create new method using the available information (MCTrackChunk)

Unfortunately, apparently does not work on p10 MC data, so had to redo with p09 data to get results

- not processed a wide range of events yet

Efficiency and purity



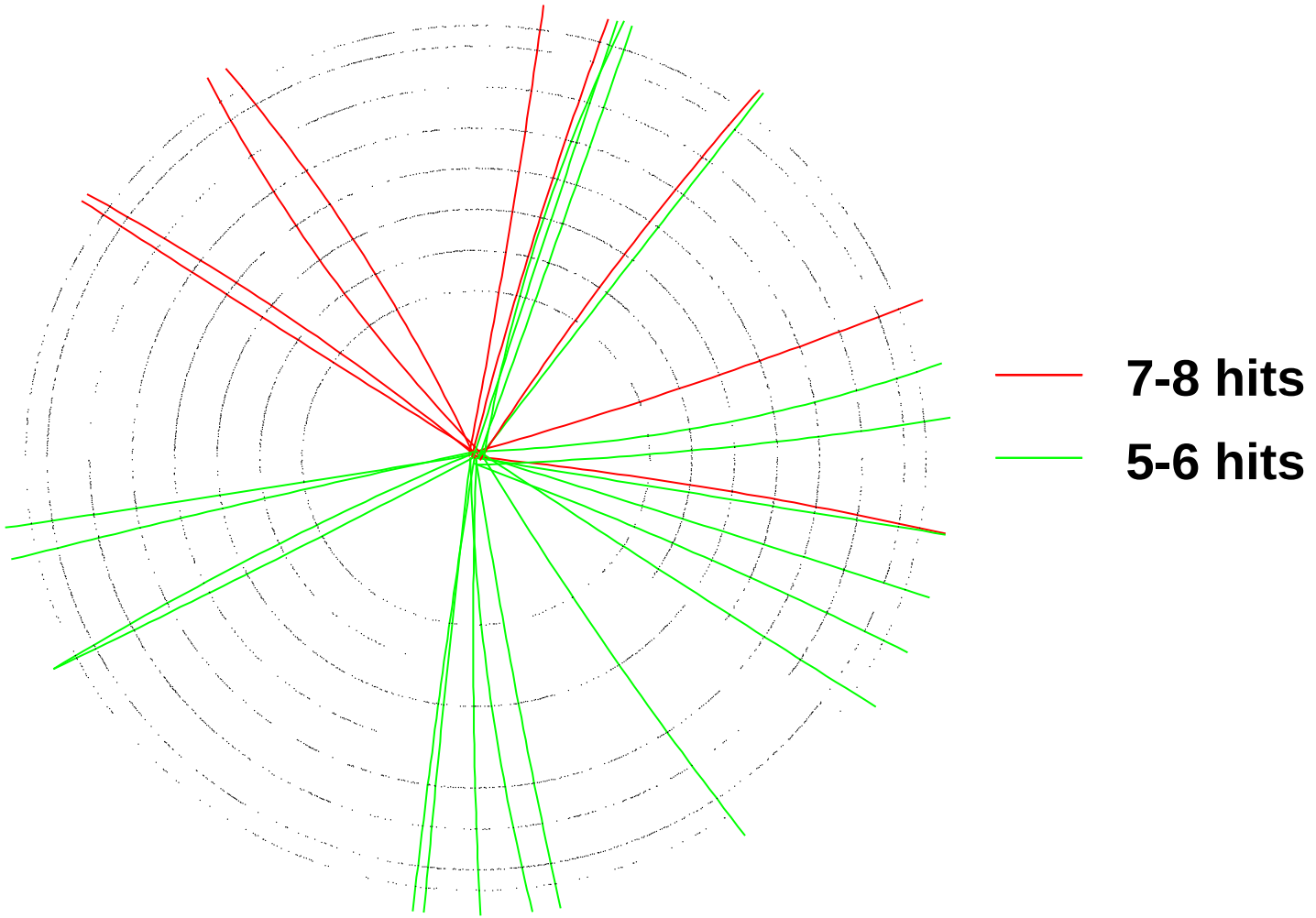


Efficiency and purity for top + 2.5 average minimum bias

Efficiency flat ~75% above 4 GeV

Purity ~80% above 3 GeV

Real data



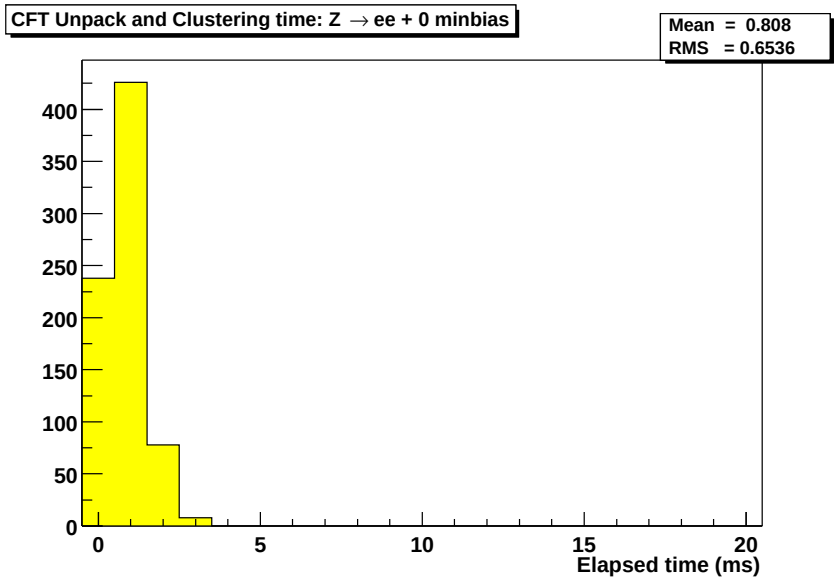
Timing

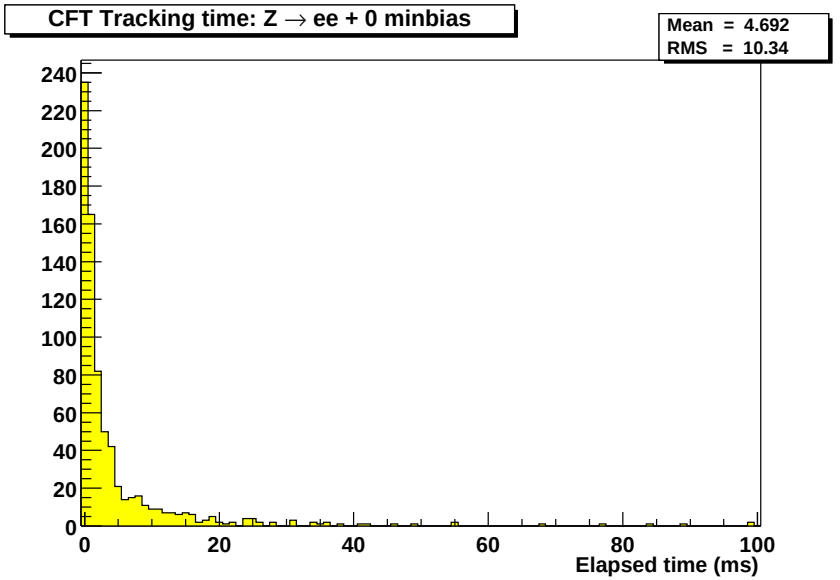
Used Imperial Grid Farm to measure running times of tools

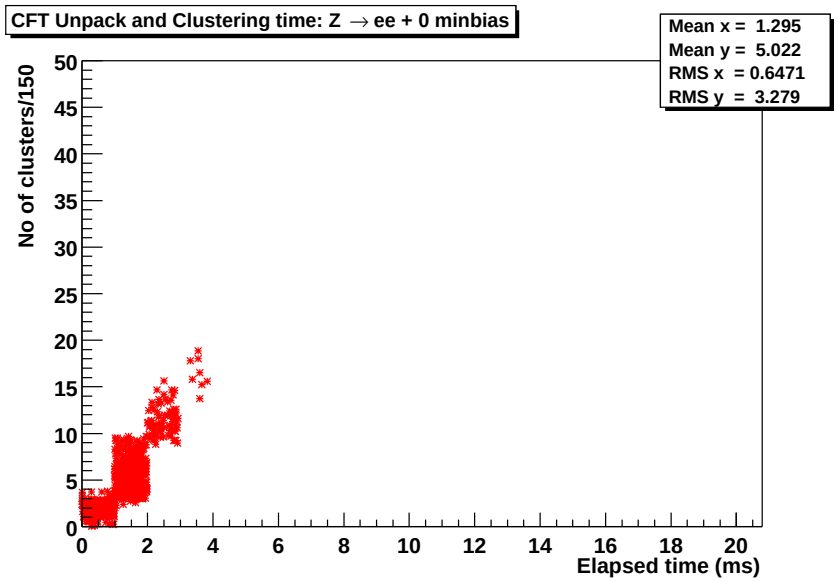
Farm machines are 1GHz dual CPU machines – comparable to filter farm

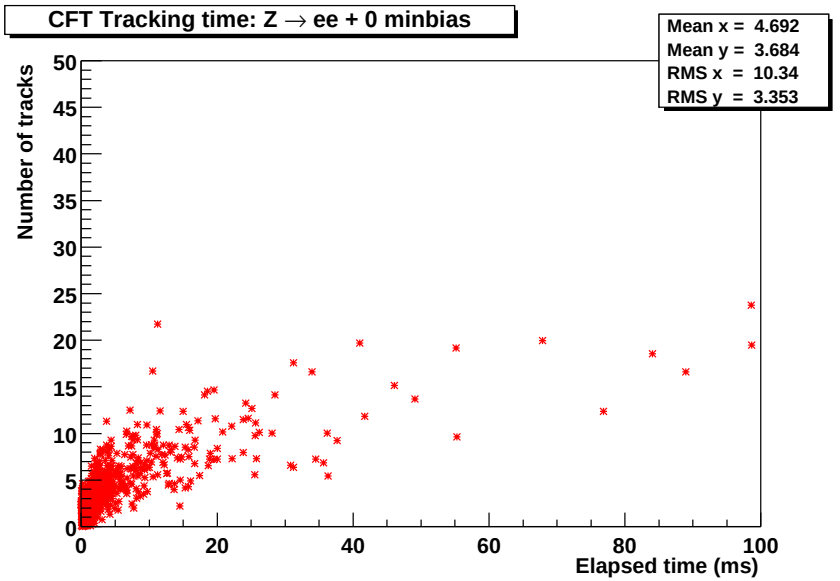
p11.00.00-maxopt release, running ScriptRunner_x with minimal triggerlist (CFT unpacking + tracking)

Z → ee no min bias

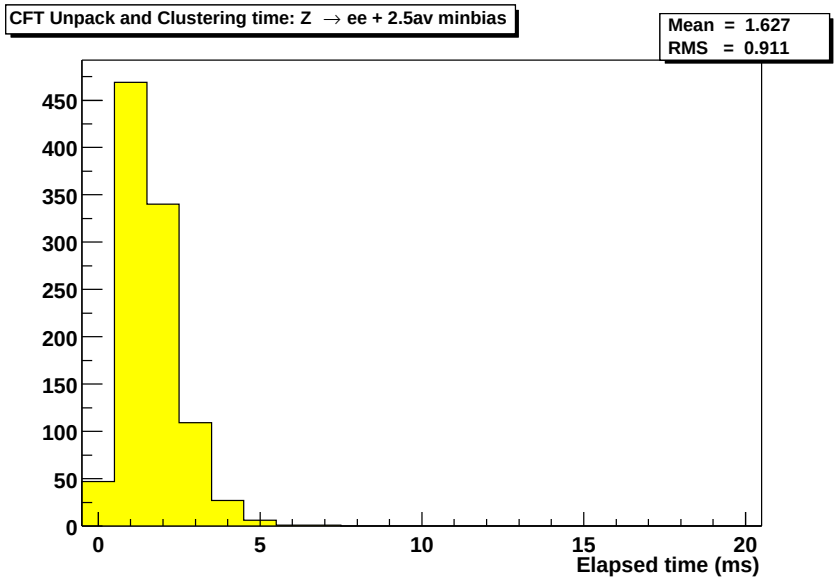


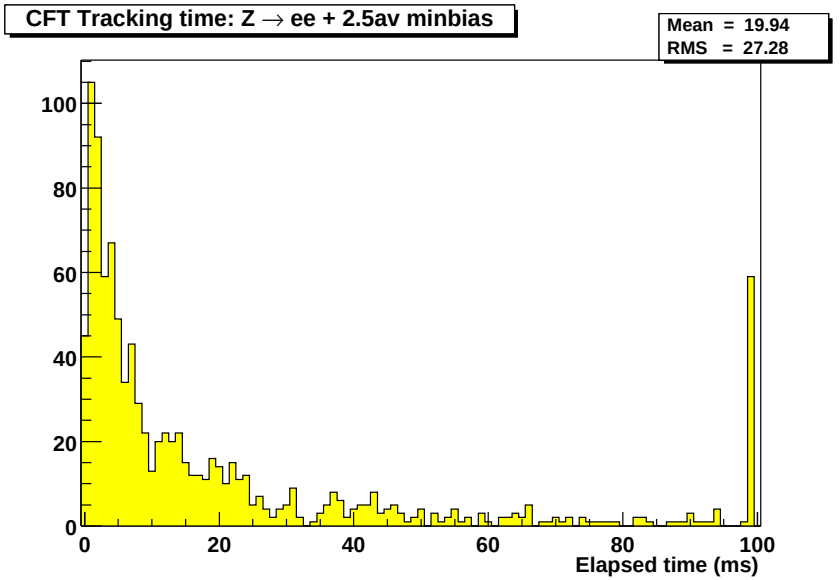


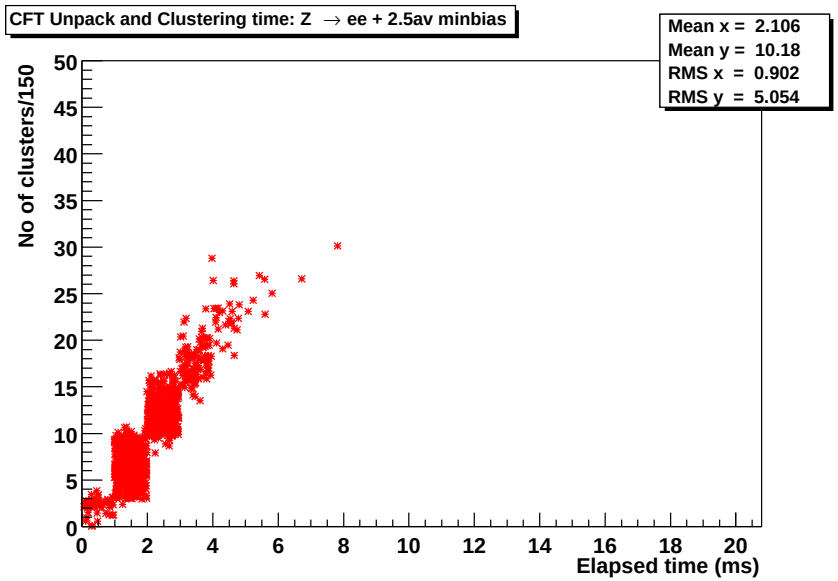


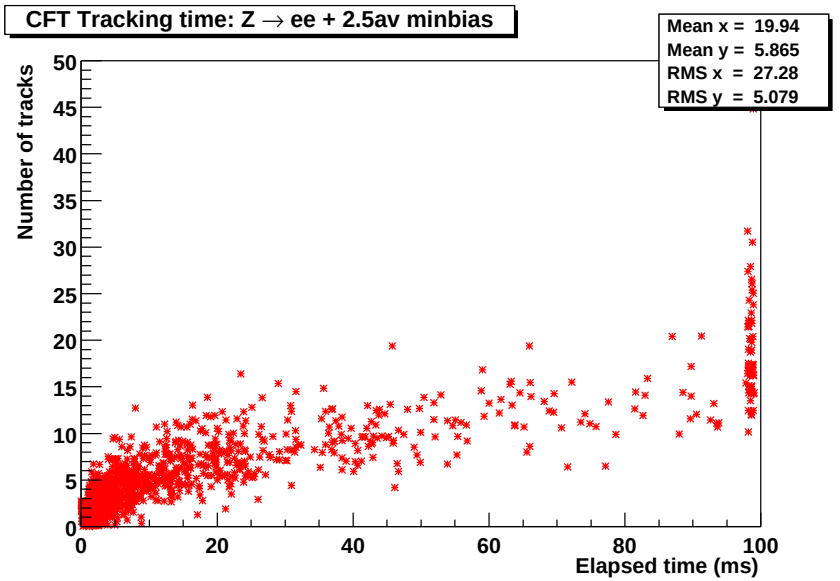


Z → ee + 2.5 average min bias

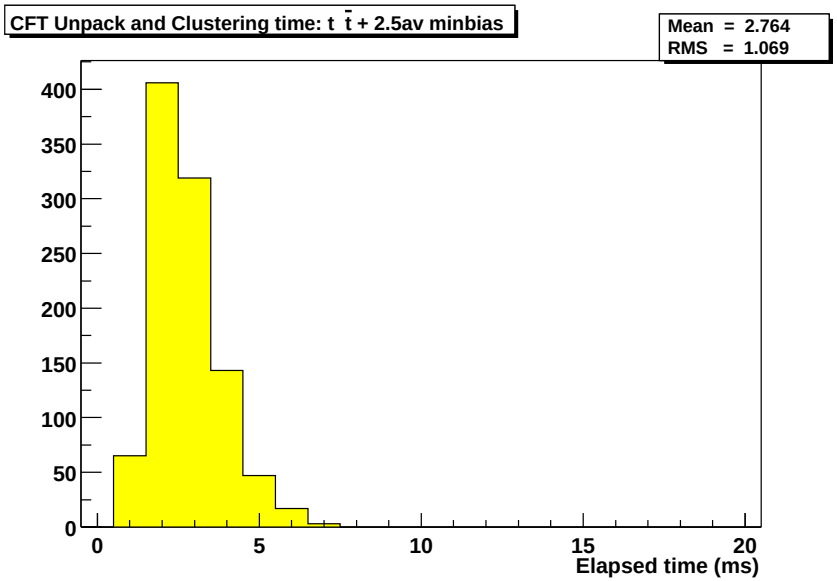


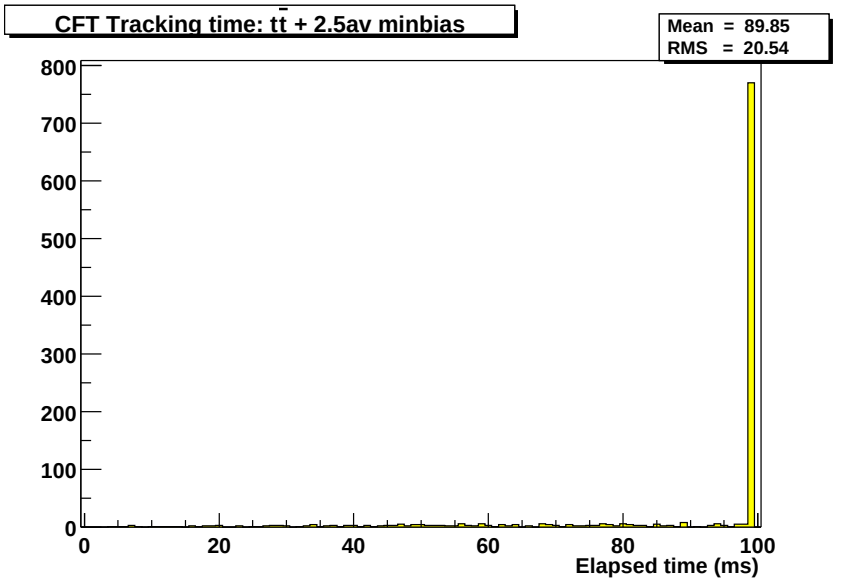


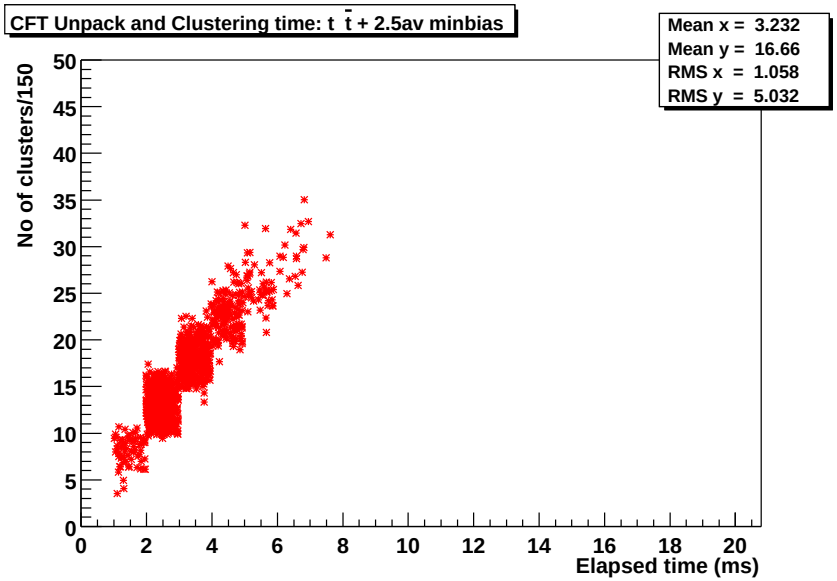


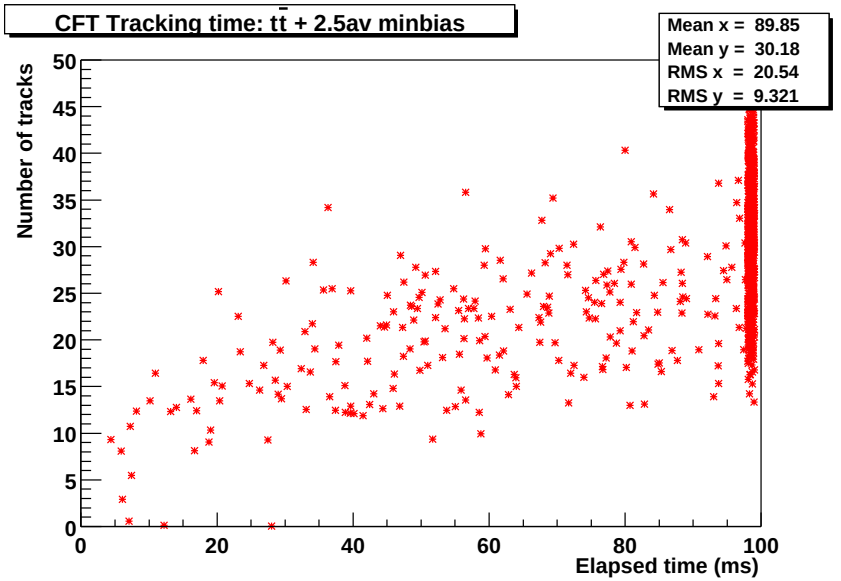


tt + 2.5 average minbias









The future

Look at improving performance (physics and speed)

Improvements to CFT unpacking for real data

- Add per channel thresholds
- Geometry (fibre numbering) in the real detector causes unnecessary copying of clusters to get them in order – need to look at this